with, and as it will eat and destroy green maize, potatoes, tomatoes, strawberries, raspberries, peaches, plums, cherries, apricots, grapes, capsicums (in fruit), and remained unhurt by an application of pure fusel oil forced on to it by means of a spray pump, its omnivorous propensities are by no means to be despised or treated lightly. It has been stated to me that the same insect made its appearance about two years since, and, so I am informed, did great damage to grapes, &c., the juices being sucked out, and the fruit then withered, and remained for some time on the trees. The remarkable part of the matter seems to me to be the question asked, from whence have they come and in such millions? I have been collecting insects for upwards of twenty-five years, and do not recollect having seen more than perhaps a dozen specimens during the whole of that time.

The remarks that have been made by some persons concerning this bug have, no doubt, caused much mirth, as only a short time since someone made the extraordinary discovery that this insect was the "true" anthracnose of the vine, while another declared it to be of spontaneous generation caused by the excessively moist season. It is, however, a fact that the insect at present has a range of nearly 1,000 miles—viz., from South Gippsland to Brisbane. The drawings which I show here this evening have been made by my friend, Mr. C. C. Brittlebank, of this club, and to whom I have also entrusted the drawing of the plates by which the "Handbook of the Destructive Insects of Victoria," now in course of preparation, will be illustrated.

PRELIMINARY ACCOUNT OF A NEW AUSTRALIAN *PERIPATUS*.

By Arthur Dendy, M.Sc., F.L.S.

A few months ago I had the pleasure of reading before the Field Naturalists' Club, a short account of a trip to Walhalla,* in which I described some of the Land Planarians met with. As a result of this paper one of our members, Mr. H. R. Hogg, began to collect Planarians for me at Macedon. I requested him to look out also for *Peripatus*, and, with a view to so doing, he carefully examined some of my specimens of *P. leuckartii*. Mr. Hogg has not been long in meeting with success in his researches into the cryptozoic fauna of Macedon, and a short time ago he kindly brought me a number of beautiful Planarians, all alive, and five specimens of *Peripatus*, two alive and three in spirits.

The Planarians I hope to describe at a future date: the *Peripatus* I propose to deal with in the present communication. Although all small, the specimens proved of the greatest interest,

* "Zoological Notes on a Trip to Walhalla," Victorian Naturalist, December, 1889.

for they undoubtedly belong to a new species. The only Australian species of *Peripatus* hitherto described is *P. leuckartii*, Sænger, which ranges through Queensland, New South Wales, and Victoria, and for details as to which I must refer the reader to my paper in the "Proceedings of the Royal Society of Victoria."* The only other Australasian species hitherto known is *P. novæ-zealandiæ*, Hutton, from New Zealand. Mr. Hogg's specimens differ in important particulars from both these species. The most important difference is in the number of pairs of legs, *P. leuckartii* and *P. novæ-zealandiæ* having each constantly 15 pairs, while the new species has only 14. The new species differs from *P. leuckartii*—to which it might be expected to be most nearly related—also in the structure of the jaws and in the pattern of the skin. The distinctness of the new species may be expressed by the statement that it differs more from either of the two previously known Australasian species than these do from one another.

On the present occasion I shall describe only the external characters, but I hope in due course to be able to give a complete anatomical account of both the Australian species, and for this purpose I would earnestly request the members of the club to search for specimens under logs and stones whenever opportunity offers; all specimens will be most gratefully received and acknowledged.

PERIPATUS INSIGNIS,† species nova.

Colour and Markings.—(*a*) *Dorsal Surface.*—The general appearance to the naked eye is dark, sometimes almost black, speckled with pale orange or yellow. Microscopical examination by reflected light shows that the skin is, as usual in the genus, divided into a very great number of narrow transverse ridges by very fine grooves of a pale yellow colour. Down the mid-dorsal line runs a narrow dark stripe with a very fine white, or almost white line running down the middle of it as in *P. leuckartii*.

The general ground colour is dark indigo blue, often almost black, and this is chequered by more or less regularly arranged patches of pale dull orange or yellow. The typical arrangement of these patches appears to be as follows:—There is a squarish patch just over the base of each leg, more distinct than any of the others. Between the legs of each pair, in the mid-dorsal line, is a similar patch, interrupted by the median longitudinal stripe already mentioned, and separated from the patch over the leg on either side by a space of about the same width as itself. Thus there is a transverse row of three patches between the legs of each pair, and with these rows alternate other rows of only two patches each, in such a manner that a kind of chessboard pattern

* "Observations on the Australian Species of *Peripatus*, part 1," Proceedings Royal Society, Victoria, July, 1889.

† *Insignis*, distinguished by a mark.

is produced. Besides these patches, there are on each side of the mid-dorsal line several longitudinal rows (the typical number appears to be four on each side) of more or less regularly arranged dull orange or yellow papillæ. Sometimes the chessboard pattern is almost obliterated, leaving the longitudinal rows of papillæ scattered over a nearly uniform dark background. The dorsal surface of the legs is dark indigo blue, with two or three orange or yellow papillæ.

(*b.*) *Ventral Surface.*—The ground colour is pale yellowish. Over this are scattered a number of papillæ, mostly of an indigo blue colour, but some dull orange; the papillæ are arranged in transverse rows, one row on each ridge of skin. The blue papillæ are most numerous along an imaginary line joining the bases of the legs of each side. In the mid-ventral line, between the legs of each pair except the last, is an unusually pale area of skin, devoid of papillæ, and sometimes presenting clear indications of a longitudinal slit-like aperture in its centre. I have described similar pale areas in *P. leuckartii*, and cannot help thinking that they must have some important morphological significance. I hope to find out later on, when working out the anatomy, what this significance may be.

(*c*) *The Antennæ.*—These are of a dark indigo blue colour.

I have above attempted to describe the characteristic pattern of the skin as deduced from five specimens, but it must be remembered that considerable individual variations are sure to occur, though probably, as in *P. leuckartii*, all the variations will be found to be readily derivable from a typical pattern. This typical pattern is quite different in the two Australian species, as will be seen on comparing my descriptions of *P. leuckartii* (*loc. cit.*)

Size.—The five specimens at present to hand are all very small, the largest being only about eleven millimetres in length (excluding the antennæ), and one millimetre in greatest breadth, after preservation in spirits.

Legs.—These are fourteen in number on each side of the body. They have three spinous pads on the ventral surface, as described by Sedgwick* for the other Australasian species. The feet closely agree with those of *P. novæ-zealandiæ*, as figured by Sedgwick (*loc. cit.*), being provided with a dorso-median papilla above the claws and a lateral one on each side.

Jaws.—The outer blade of the jaw is simple as in *P. novæ-zealandiæ*, and not provided with an accessory tooth as in *P. leuckartii*.

Genital Aperture.—The genital aperture is situated between the legs of the last pair. In some specimens it is a very prominent white papilla; these are probably females. The other specimens,

* "Monograph of the Species and Distribution of the Genus *Peripatus*" (Guilding), Quarterly Journal of Microscopical Science, April, 1888.

in which it is less prominent, may be young females or males, but I have found no white papilla on the base of the last leg, such as exists in the males of *P. leuckartii.*

Habitat.—Macedon, Victoria. In and upon rotten wood.

NOTES ON THE DISTRIBUTION OF AQUATIC PLANTS IN NEW SOUTH WALES.

By Rev. W. Woolls, Ph.D., F.L.S., Hon. Member.

(Read before Field Naturalists' Club of Victoria, 10th March, 1890.)

As some remarks on the distribution of certain aquatic plants in New South Wales may interest Victorian naturalists and induce them to ascertain how far the species extend to both colonies, I take the liberty of referring to such plants of the kind as have come under my own observation. The order which first claims attention is that of Lemnaceæ, because the species are but imperfectly known, and present, as Mr. Bentham observed, some curious organisms for special study. *Wolffia arrhiza* (Wimm.) which in certain seasons is common on the lagoons of the Hawkesbury, appears like a green globule on the surface of the water, and generally in company with some species of *Lemna.* It has not any roots, and the new fronds arise from the side of the older plant. The fructification is yet unknown, and Baron Mueller, in his review of the Lemnaceæ (Fragmenta, vol. viii., p. 188), is of opinion that the species cannot safely be separated from *W. micheli.* R. Brown seems to have collected (probably in the Botany swamps) two species of *Lemna—L. trisulca* and *L. minor*—the former of which occurs less frequently than the latter and is minutely toothed at one end of the frond. *L. minor* is still abundant at Botany, especially in stagnant and impure water, and is regarded as a means of purifying the air in marshy places by exhaling oxygen during the night. This plant increases very rapidly by gemmulæ, or little buds, and in a short time forms dense masses, so as to conceal the water on which it floats. The fructification of this species is very minute, but, with an ordinary pocket lens, the beautifully reticulated sheath containing the flowers may be clearly seen. I have collected *L. minor* in the neighbourhood of Sydney, and also in ponds at Richmond, and, as far as I can judge, it does not differ from the European species. *L. oligorrhiza* (Kurz), as well as *L. minor*, occurs in Parramatta, and is distinguished by having more roots, whilst *L. polyrrhiza* (Linn.) which is frequent in the lagoons of the Hawkesbury, has a still greater number. It appears to me that the distribution of these little plants is as much influenced by the quality of the water as that of terrestrial plants by the nature of the soil, and it would be interesting to ascertain whether they may not be regarded as affording a test of impurity held in solution. Amongst